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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,981	04/07/2006	Taketoshi Usui	10993.0270	7145
22852	7590	07/19/2010		
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			EXAMINER MCULLEY, MEGAN CASSANDRA	
			ART UNIT	PAPER NUMBER
			1796	
			MAIL DATE	DELIVERY MODE
			07/19/2010	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/574,981

**Applicant(s)**

USUI ET AL.

**Examiner**

Megan McCulley

**Art Unit**

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 April 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1.5 and 7-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1.5 and 7-29 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 April 2010 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-06)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

The drawings are not entered because: 1) The drawing sheets are not presented as replacement drawing sheets, 2) the drawings contain new matter and 3) Figure 4 is not labeled as –Prior Art--.

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. **Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d).** A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as “amended.” If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and within the top margin.

Figure 3 contains new matter. There is no support in the originally filed specification for "the total of the number of carbon atoms from the branching point to the nitrogen atoms corresponding to isocyanate groups is 3 to 20, preferably 5 to 10." The specification, on pages 10 and 11 states that the total of the number of carbon atoms from the urea bond to the atom of the branching point and the number of carbon atoms from the urea bond to the nitrogen atom, which is different from the urea bond mentioned above is preferable 3 to 20, more preferably 5 to 10.

Figure 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

Claim 18 is objected to because of the following informalities: Claim 18 recites the limitation "the core-shell type curing agent" in the second line. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 5 and 7-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the originally filed specification for "the total of the number of carbon atoms from the branching point to the nitrogen atoms corresponding to isocyanate groups is 3 to 20, including the carbon atom at the branching point", which is included in amended claims 1 and 17. The specification, on pages 10 and 11 states that the total of the number of carbon atoms from the urea bond to the atom of the branching point and the number of carbon atoms from the urea bond to the nitrogen atom, which is different from the urea bond mentioned above is preferable 3 to 20.

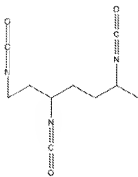
***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 5, 7-16, and 18-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishimura et al. (EP 0 304 503) in view of Hosokawa et al. (JP 2000-

230032). The English language machine translation for the Japanese document is used for the citations below.

Regarding claims 1, 27-29: Ishimura et al. teaches a curing agent for an epoxy resin comprising a coating for a curing agent obtained by reacting a polyisocyanate (b1)



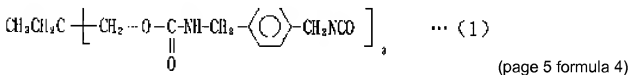
of the formula: 1,3,6-triisocyanate methylhexane/(b1) (pg. 6 line 20) reacted with an active hydrogen compound (b2)/water (pg. 6 lines 5-10) to form a urea linkage. The isocyanate 1,3,6-triisocyanate methylhexane/(b1) has not less than three isocyanate groups and has a low molecular weight. Further, since it is a discrete molecule rather than a polymer there is no molecular weight distribution. A polyurea is made by this reaction which would incorporate at least one nitrogen of the isocyanate. The polyurea would contain the two structures of the reactants/isocyanates that went into making the polyurea. The structures each contain three nitrogen atoms at a

branching point via a linear aliphatic hydrocarbon group



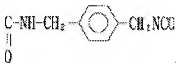
(see formula above). There are 1-5 carbon atoms in the molecular chain from the nitrogen atom in the urea bond to the branching point and 6 total carbon atoms between nitrogen atoms corresponding to isocyanate groups.

Ishimura et al. does not disclose another isocyanate compound, the ratio of the low molecular weight polyisocyanate compound to the total amount of the isocyanate component or the polyisocyanate has a structure of an aromatic hydrocarbon group bonded to no less than two nitrogen atoms. However, Hosokawa et al. teaches a mixture of two polyisocyanates used to coat an epoxy resin curing agent obtained by reacting of an isocyanate (b1) of the formula:



with an active hydrogen compound (b2)/water (pg. 9 para 36) and another isocyanate compound (page 2 formula 2) which is a polyisocyanate. The isocyanate of formula 1/(b1) has not less than three isocyanate groups and has a low molecular weight (676). Further, since it is a discreet molecule rather than a polymer, i.e. n=3, there is no molecular weight distribution. It is in an amount of 30-80% (page 5 end of para. 8) to the total amount of isocyanate compounds, which overlaps the claimed ranges. A polyurea is made by this reaction (page 9 para. 36) which would incorporate at least one nitrogen of the isocyanate. The polyurea would contain the two structures of the reactants/isocyanates that went into making the polyurea. The structures each contain three nitrogen atoms at a branching point via a linear aliphatic hydrocarbon group

$\text{CH}_3\text{CH}_2\text{C} \left[ \text{CH}_2 \cdots \text{O} - \underset{\text{O}}{\underset{\parallel}{\text{C}}} - \text{NH} - \text{CH}_2 - \langle \bigcirc \rangle - \text{CH}_2\text{NCO} \right]_n$  (see formula 1 above). Also the polyisocyanate has a structure of an aromatic hydrocarbon group bonded to no less than two nitrogen atoms



, which would remain after the isocyanate reaction (see formula 1 above).

Ishimura et al. and Hosokawa et al. are analogous art since they are both concerned with the same field of endeavor, namely core shell urea curing agents for epoxy resins. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the additional polyisocyanate in the curing agent of Hosokawa et al. with the composition of Ishimura et al. and would have been motivated to do so for such desirable properties as control over the destructive temperature of the shell part and a semiconductor device excellent in solder-proof nature, as evidenced by Hosokawa et al. (page 5 para. 10).

Regarding claim 5: A urea bond has a bonding absorbing infrared wavelength of 1630 to 1680  $\text{cm}^{-1}$ , as evidenced by the instant specification (para. 118 of publication).

Regarding claim 7: Ishimura et al. teaches an amine curing agent (abstract).

Regarding claim 8: While Ishimura et al. does not directly teach that the glass transition temperature of the coating is 80 °C or less, since all of the components are present in the composition it is inherent that the composition would have these properties. If it is applicants' position that this would not be the case: (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with these properties.



Regarding claim 9: Ishimura et al. teaches a core shell curing agent obtained by reacting the curing agent and an epoxy resin (abstract).

Regarding claim 10: Ishimura et al. teaches a master batch curing agent comprising 100 parts by mass of the curing agent/hardener and 10-50,000 parts by mass of an epoxy resin (abstract).

Regarding claim 11: Ishimura et al. teaches 0.1 to 100 parts by weight of the hardener to 100 parts of an epoxy resin (page 9 lines 19-20).

Regarding claim 12: Ishimura et al. teaches the composition can be mixed with other curing agents such as acid anhydrides (page 9 lines 24-39). Example 13 has 100 parts by weight epoxy, 90 parts by weight acid anhydride and 10 parts by weight hardener (pg. 18), which overlaps the claimed ranges.

Regarding claims 13, 23: Ishimura et al. teaches using the compositions for IC chip sealing, which uses anisotropic conductive materials (pg. 10 lines 21-31).

Regarding claims 14, 24: Ishimura et al. teaches using the compositions for the bonding of printed circuit boards, which uses conductive adhesive materials (pg. 10 lines 21-31).

Regarding claims 15, 25: Ishimura et al. teaches using the compositions for bonding headlight devices, which uses insulating adhesive material (pg. 10 lines 21-31).

Regarding claims 16, 26: Ishimura et al. teaches using the compositions for sealing/encapsulating motor coils (pg. 10 lines 21-31).

Regarding claim 18: Ishimura et al. teaches a master batch curing agent comprising 100 parts by mass of the curing agent/hardener and 10-50,000 parts by mass of an epoxy resin (abstract).

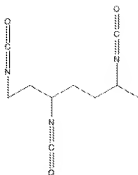
Regarding claim 19: Ishimura et al. teaches 0.1 to 100 parts by weight of the hardener to 100 parts of an epoxy resin (page 9 lines 19-20).

Regarding claim 20: Ishimura et al. teaches 0.1 to 100 parts by weight of the masterbatch to 100 parts of an epoxy resin (page 9 lines 19-20).

Regarding claims 21, 22: Ishimura et al. teaches the composition can be mixed with other curing agents such as acid anhydrides (page 9 lines 24-39). Example 13 has 100 parts by weight epoxy, 90 parts by weight acid anhydride and 10 parts by weight masterbatch (pg. 18), which overlaps the claimed ranges.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishimura et al. (EP 0 304 503) in view of Hosokawa et al. (JP 2000-230032). The English language machine translation for the Japanese document is used for the citations below.

Regarding claim 17: Ishimura et al. teaches a method of making a curing agent for an epoxy resin comprising a coating for a curing agent obtained by reacting a



polyisocyanate (b1) of the formula:

1,3,6-triisocyanate

methylhexane/(b1) (pg. 6 line 20) reacted with an active hydrogen compound (b2)/water (pg. 6 lines 5-10) to form a urea linkage. The isocyanate 1,3,6-triisocyanate methylhexane/(b1) has not less than three isocyanate groups and has a low molecular weight. Further, since it is a discrete molecule rather than a polymer there is no molecular weight distribution. A polyurea is made by this reaction which would incorporate at least one nitrogen of the isocyanate. The polyurea would contain the two structures of the reactants/isocyanates that went into making the polyurea. The structures each contain three nitrogen atoms at a branching point via a linear aliphatic

hydrocarbon group

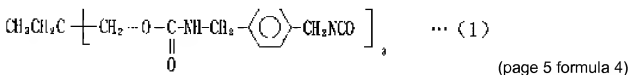


(see formula above). There are 1-5

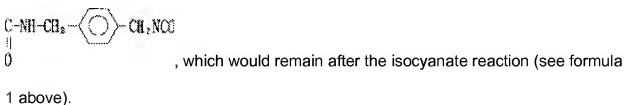
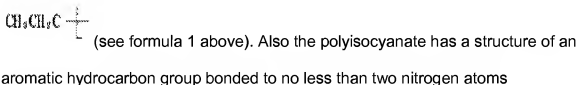
carbon atoms in the molecular chain from the nitrogen atom in the urea bond to the branching point and 6 total carbon atoms between nitrogen atoms corresponding to isocyanate groups.

Ishimura et al. does not disclose another isocyanate compound, the ratio of the low molecular weight polyisocyanate compound to the total amount of the isocyanate component or the polyisocyanate has a structure of an aromatic hydrocarbon group bonded to no less than two nitrogen atoms. However, Hosokawa et al. teaches a

mixture of two polyisocyanates used to coat an epoxy resin curing agent obtained by reacting of an isocyanate (b1) of the formula:



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epoxy resins. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the additional polyisocyanate in the curing agent of Hosokawa et al. with the composition of Ishimura et al. and would have been motivated to do so for such desirable properties as control over the destructive temperature of the shell part and a semiconductor device excellent in solder-proof nature, as evidenced by Hosokawa et al. (page 5 para. 10).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1, 5 and 37-29 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Megan McCulley whose telephone number is (571)270-3292. The examiner can normally be reached on Monday - Thursday 7:30-6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Supervisory Patent Examiner, Art Unit 1796

/M. M./  
Examiner, Art Unit 1796